

An Elementary Proof of Earth's Rotational Year

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GIVEN:

SOLAR day 86,400 seconds

STELLAR day 86,164.098903691 seconds

Diurnal Ratio 1.002737811911347

PART - A

How many STELLAR days are in a SOLAR day?

$$86,400 \div 86,164.098903691 = 1.002737811911347$$

PART - B

When comparing a SOLAR day and a STELLAR day, what is the difference?

$$\text{Difference} = 0.002737811911347 = \text{portion of a STELLAR day}$$

PART - C

For the difference to accumulate to one complete STELLAR day, how many SOLAR days must pass?

$$1 \div 0.002737811911347 = 365.2551863973876$$

PART - D

How are SOLAR days transformed into STELLAR days?

$$365.2551863973876 \times 1.002737811911347 = 366.2551863973876$$

CONCLUSION

The only yearly orbital time period that synchronizes with Earth's diurnal rotation is:

365.2551863973876 SOLAR days

366.2551863973876 STELLAR days

Yearly Ratio = 1.002737811911347

On a yearly basis, the two rotation types differ by 1.0 and comply with Earth's diurnal ratio.

References and Author's Statement: The duration of the solar day is a mean value adopted by the International Astronomical Union. The duration of the stellar day was provided by the International Earth Rotation and Reference System Service. These calculations are based upon the accuracy of Very Long Baseline Interferometry. This proof would not have been possible prior to the VLBI improvements of 1984. The Rotational Year allows direct calculation of precession in right ascension of the equatorial stars without the use of Gravity Theory, Precession Theory, and the Theory of Relativity.